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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 09/787,300 | 05/30/2001 | George H. Alessi | 34415/254293 | 8157 |

23370 7590 10/06/2004

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| EXAMINER | |
|---|---|
| DAVIS, CYNTHIA L | |
| **ART UNIT** | **PAPER NUMBER** |
| 2665 | |

DATE MAILED: 10/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

KD

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/787,300 | ALESSI ET AL. | |
| | Examiner | Art Unit | |
| | Cynthia L Davis | 2665 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) 1-41 is/are pending in the application.

4a) Of the above claim(s) 38-39 is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-25, 27-37, and 40-41 is/are rejected.

7)☒ Claim(s) 26 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 9/16/1998 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 1/31, 3/4, 5/4/02.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Election/Restrictions*

Claims 38 and 39 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected method, there being no allowable generic or linking claim. Election was made **without** traverse in a phone consultation on September 28, 2004.

### *Specification*

1. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

1. Claims 1, 2, 5, 8, 10, 11, and 32-37 are rejected under 35 U.S.C. 102(a) as being anticipated by Pasternak (5936949).

Regarding claim 1, a system having a data sender, a data receiver, and at least on communication device for transmitting in an error-prone network is disclosed in Pasternak, figure 1. A first error control subsystem, coupled to the data sender, comprising a protocol converter that separates incoming network data traffic by QoS requirements is disclosed in column 8, lines 28-29. An error correction module that receives separated data, encodes the data in order to decrease potential transmission

errors, and outputs the data to the communications device for transmission over the network is disclosed in figure 5a, element 504, and column 6, line 63-column 7, line 53. A second error control subsystem, coupled to the data receiver and a second network, with a second error control module, coupled to the second network, and which received and decodes the encoded data, is disclosed in column 7, lines 42-46. A second protocol converter that reformats the decoded data into data consistent with the protocol of the second network is disclosed in column 15, lines 31-35.

Regarding claim 2, the second error control module transmitting periodic messages to the first module describing the success or failure of a transmission of data is disclosed in column 10, lines 37-8.

Regarding claim 5, a method for increasing the transmission efficiency of an error prone network comprising sorting multiple data packets, formatted according to one or more network protocols, wherein the sorting is at least based on each packets' quality of service requirement is disclosed in Pasternak, column 8, lines 28-29. Forming the sorted packets into multiple datastreams, wherein each datastream is associated with a particular QoS requirement, is disclosed in column 8, lines 28-29 (the different queues are the same as different datastreams). Performing forward error correction on each datastream is disclosed in column 8, line 38.

Regarding claim 8, identifying each datastream that comprises quality critical data is disclosed in column 1, lines 51-57 (some service types are considered quality critical, some are not). Applying automatic retransmit protocols to each datastream

comprising quality critical data is disclosed in column 8, lines 23-27 (the applications retransmit would only be applied to would be the quality critical ones).

Regarding claim 10, converting the packets to a generic format, after the identification of QoS levels (line 35, "application specific," different applications have different QoS levels), in order to facility the application of FEC is disclosed in column 15, lines 18-38.

Regarding claim 11, receiving the generically formatted datastream following its transmission over a data link and examining the datastream and reconstructing packets from the datastream into a protocol adapted to the network to which the data link couples is disclosed in column 15, lines 31-35.

Regarding claim 32, a first ATM adaptation layer that delivers quality critical data from the data sender to a network device, and a second ATM adaptation layer that delivers time-critical data from the data sender to a network device is disclosed in column 1, lines 51-57. An error control module that modifies the payload length of at least the separated data traffic, the error control module encoding the data and outputting the data to the wireless transmission device is disclosed in Pasternak, figure 12, which shows packets with a floating payload structure.

Regarding claim 33, a protocol converter module that separates network data traffic by data type is disclosed in column 11, lines 45-49.

Regarding claim 34, the data type being the QoS level for the data traffic is disclosed in column 11, lines 45-49.

Regarding claim 35, the error control module adapted to determine whether selected criteria are satisfied and thereafter retransmit quality critical data in order to ensure delivery is disclosed in column 8, lines 23-27.

Regarding claim 36, the first ATM adaptation layer coupled to an IP stack providing the time-critical or quality critical data in the form of an IP packet and further comprising a first sublayer that creates a data unit containing the IP packet is disclosed in column 11, line 50-column 12, line 38 (the queue is the same as an IP stack; when a grant arrives, the data unit is created for transmission).

Regarding claim 37, the FEC being a Reed-Solomon FEC scheme is disclosed in column 7, lines 19-20.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pasternak in view of Kadambi (6335935).

Regarding claim 3, the method of claim 1 is disclosed in Pasternak. Claim 3 further discloses a data rate converter that allocates available bandwidth for particular communications based upon a weighted priority scheme, which is missing from Pasternak. This is disclosed in Kadambi (6335935), column 31, line 53-column 32, line 6. It would have been obvious to one skilled in the art at the time of the invention to use a weighted priority allocation scheme. The motivation would be to allocate bandwidth efficiently.

Regarding claim 4, the method of claim 3 is disclosed in Pasternak in view of Kadambi. Claim 4 further specifies determining the priority of each communication being sent by the data converter over the network and assigning each communication a weight factor depending upon the priority of each communication and initially allocating bandwidth to a particular communication over a selected date link within the network based on the bandwidth available on that data link for all communications, the weight factor assigned to that particular communication, the quality of the data link or any combination of the foregoing factors, which is missing from Pasternak. However, this is disclosed Kadambi (6335935), column 31, line 53-column 32, line 6. It would have been obvious to one skilled in the art at the time of the invention to use a weighted priority allocation scheme. The motivation would be to allocate bandwidth efficiently.

3. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pasternak in view of Mikkonen (6587457).

Regarding claim 6, the method of claim 5 is disclosed in Pasternak. Varying the FEC is disclosed in Pasternak, column 7, lines 2-7 ("sometimes alleviated"). Claim 6 further specifies the variation being based on QoS, which is missing from Pasternak. FEC being performed by varying the forward error correction applied to each datastream based on the quality of service level associated with that particular datastream is disclosed in Mikkonen, column 8, line 62- column 9, line 9. It would have been obvious to one skilled in the art at the time of the invention to vary the FEC based on QoS. The motivation would be to improve efficiency of the wireless data link.

4. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pasternak in view of Shiomoto (6289485).

Regarding claim 9, the method of claim 8 is disclosed in Pasternak. Claim 9 further specifies modifying the payload length of packets based on the at least estimated quality of the link over which a particular packet will be transmitted, or the quality of service associated with the particular packet, or both of these factors, which is missing from Pasternak. However, this is disclosed in the abstract of Shiomoto, which teaches a relationship between packet length and link quality. It would have been obvious to one skilled in the art at the time of the invention to vary payload size based on link quality. The motivation would be to increase the link quality.

5. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pasternak in view of Golestani.

Regarding claim 23, determining whether a selected data transmission includes time critical or quality critical data is disclosed in column 1, lines 51-56 (the different

services are either time or quality critical). Parsing at least a portion of the data into automatic retransmit request packet data units is disclosed in column 8, lines 23-27. Retransmitting, upon satisfaction of preselected criteria, the quality critical data in order to ensure that said data reaches its destination is disclosed at column 8, lines 23-27. Claim 23 further specifies modifying the payload length of the ARQ-PDUs in order to improve throughput efficiency, which is missing from Pasternak. This is disclosed in Golestani, column 4, lines 33-35, which discusses varying frame length in order to control congestion. It would have been obvious to one skilled in the art at the time of the invention to vary the payload length. The motivation would be to control congestion on the network, which will improve throughput efficiency.

6. Claims 24, 25, 27, 28, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pasternak in view of Golestani in further view of Shiomoto.

Regarding claim 24, the method of claim 23 is disclosed in Pasternak in view of Golestani. Claim 24 further specifies measuring the quality of a data link assign to carry the selected data transmission and wherein the payload length is modifies based upon the measured quality of the data link, which is missing from Pasternak. However, this is disclosed in the abstract of Shiomoto, which teaches a relationship between packet length and link quality. It would have been obvious to one skilled in the art at the time of the invention to vary payload size based on link quality. The motivation would be to increase the link quality.

Regarding claim 25, the quality measuring being performed by analayzing either the information received from a destination receiver within the ATM network is disclosed

in Pasternak, column 10, lines 37-8 (the receiver is sending acknowledgement of reception or error to provide the first error control module with a measure of the link quality).

Regarding claim 27, the method of claim 24 is disclosed in Pasternak is view of Golestani and Shiomoto. Claim 27 further specifies updating the generation rate of control packets based on the new payload length, which is not explicitly disclosed in Pasternak, Golestani, or Shiomoto. However, it would obviously take longer to make larger packets. It would have been obvious to one skilled in the art at the time of the invention to change the generation rate based on payload size. The motivation would be to have the generation rate match up with the length of time necessary to produce a packet.

Regarding claim 28, transmitting periodic control messages that describe the success or failure of a particular quality critical data transmission is disclosed in Pasternak, column 10, lines 37-8.

Regarding claim 30, determining the QoS requirements associated with a particular transmission is disclosed in Pasternak, column 1, lines 51-55 (the different types of services have different quality requirements).

7. Claims 7, 12, 13, 14-16, 18-20, 22, 31 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pasternak in view of Ayanoglu (5600663).

Regarding claim 7, the method of claim 5 is disclosed in Pasternak. Claim 7 further specifies varying the FEC and monitoring the quality of the datalink over which a particular datastream will be transmitted and varying the FEC applied to the particular

datastream based on the quality of the datalink, which is missing from Pasternak. This is disclosed in Ayanoglu, column 1, line 65-column 2, line 3, which discusses varying error correction based on error rates detected in a link. It would have been obvious to one skilled in the art at the time of the invention to vary the FEC based on the link quality. The motivation would be to increase throughput of the link while maintaining quality.

Regarding claim 12, a first protocol converter coupled to an application that provides packetized data in a first protocol wherein the protocol converter converts the packetized data into a generic format and splits the converted data into multiple datastreams that each have a selected, but different, QoS levels is disclosed in column 1, lines 51-56 (when the data is received by the encoder, it is split into the various QoS levels). Claim 12 further specifies a first error control module, coupled to the protocol converter, that encodes the data within each of the multiple datastreams based link quality, which is missing from Pasternak. This is disclosed in Ayanoglu, column 1, line 65-column 2, line 3, which applies adaptive forward error correction based on error patters detected in a link. It would have been obvious to one skilled in the art at the time of the invention to vary the error correction encoding based on the link quality. The motivation would be to have better error correction be applied when error rates go up.

Regarding claim 13, the system of claim 12 is disclosed in Pasternak in view of Ayanoglu. Claim 13 further discloses that the encoding comprising adaptive forward error correction, which is missing from Pasternak. This is disclosed in Ayanoglu at column 1, line 65-column 2, line 3. It would have been obvious to one skilled in the art

at the time of the transmission to use adaptive forward error correction. The motivation would be to reduce retransmission.

Regarding claim 14, the encoding applied by the first error control module further comprising repackaging the data within the data stream into packets having a selected format and variable payload size is disclosed in Pasternak, figure 12, which shows packets with a floating payload structure.

Regarding claim 15, a second error control module that transmits periodic control messages to the first error control subsystem describing successful or unsuccessful data transmission is disclosed in Pasternak, column 10, lines 37-8.

Regarding claim 16, the second error control module coupled to the datalink and providing measures or estimates of the quality of the datalink to the first error control module is disclosed in column 10, lines 37-8 (sending acknowledgement of reception or error provides the first error control module with a measure of the link quality).

Regarding claim 18, separating the datastreams into time and quality critical datastreams is disclosed in column 11, lines 45-49. Coupling to a datalink and forwading time-critical datastreams directly thereto, and forwarding quality critical data to a retransmission module that monitors transmission of the quality critical data and retransmits said data based on at least one parameter is disclosed in Pasternak, column 8, lines 23-27 (the applications retransmit would be applied to would be the quality critical ones, time-critical applications would not be retransmitted).

Regarding claim 19, the at least one parameter being independent of any estimate of the round trip time necessary for the transmission to reach its destination

and for the error control module thereafter to receive an acknowledgment is disclosed in Pasternak, column 8, lines 23-27 (there is no mention here of round trip time, merely that some applications may require retransmission, hence, retransmission is based upon application, not round trip time).

Regarding claim 20, the system of claim 12 is disclosed in Pasternak in view of Ayanoglu. Converting the packetized data into a generic format and concatenating it with the converted data from the first protocol converter into the multiple data streams is not specifically disclosed in Pasternak. However, the converter of column 15, lines 31-37 could convert the packetized data into a generic format and concatenate it with the other data ("whatever format the carrier network requires"). It would have been obvious to one skilled in the art at the time of the invention to convert and concatenate the data. The motivation would be to put the generic data into the correct protocol for the carrier network.

Regarding claim 22, the first protocol converter and the first error control module being deployed within a modem is disclosed in Pasternak, figure 5a, element 504.

Regarding claim 31, the method of claim 20 is disclosed in Pasternak in view of Ayanoglu. Claim 31 further specifies determining the number of attempts to retransmit a particular quality critical data transmission base based upon the determined QoS requirement associated with that particular quality critical data transmission, which is not explicitly stated in Pasternak. However, retransmission is disclosed in Pasternak at column 8, lines 23-28. It would have been obvious to one skilled in the art to have the

number of attempts based on the QoS. The motivation would be to have more attempts for higher QoS data, thereby ensuring that it arrives at the receiver.

Regarding claim 40, the FEC being a Reed-Solomon FEC scheme is disclosed in Pasternak, column 7, lines 19-20.

8. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pasternak in view of Ayanoglu (5600663) in further view of Golestani (5050161).

Regarding claim 17, the system of claim 12 is disclosed in Pasternak in view of Ayanoglu. Claim 17 further specifies protocol converter module including a unit for creating a payload that is transmitted to the error control module, wherein the size of the payload is chosen adaptively based on conditions of the transmission medium, which is missing from Pasternak and Ayanoglu. This is disclosed in Golestani, column 4, lines 33-35, which discusses varying frame size to control congestion on a network. It would have been obvious to one skilled in the art at the time of the invention to vary the payload size based on conditions in the transmission medium. The motivation would be to control congestion in the medium. The payload being formatted in accordance with an automatic retransmit request protocol, is disclosed in Pasternak, column 8, lines 23-27 (retransmission can be applied).

9. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pasternak in view of Ayanoglu in further view of Kadambi (6335935).

Regarding claim 21, the system of claim 12 is disclosed in Pasternak in view of Ayanoglu. Claim 21 further discloses a data rate converter that allocates available bandwidth for available bit rate transmissions based upon a weighted-priority scheme,

which is missing from Pasternak. However, this is disclosed Kadambi (6335935), column 31, line 53-column 32, line 6. It would have been obvious to one skilled in the art at the time of the invention to use a weighted priority allocation scheme. The motivation would be to allocate bandwidth efficiently.

10. Claims 29 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pasternak in view of Golestani and Shimoto in further view of Ayanoglu.

Regarding claim 29, the method of claim 24 is disclosed in Pasternak is view of Golestani and Shiomoto. Claim 29 further specifies applying to time critical data forward error correction that varies, which is missing from Pasternak, Golestani, and Shiomoto. Varying the FEC is disclosed in Pasternak, column 7, lines 2-7 ("sometimes alleviated"). However, Claim 29 also states that the FEC is varied according to the measured quality of the data link, which is missing from Pasternak. This is disclosed in Ayanoglu, column 1, line 65-column 2, line 3, which discusses varying error correction based on error patterns in a link. It would have been obvious to one skilled in the art at the time of the invention to vary the FEC based on the link quality. The motivation would be to increase throughput of the link while maintaining quality.

Regarding claim 41, the FEC being a Reed-Solomon FEC scheme is disclosed in Pasternak, column 7, lines 19-20.

***Allowable Subject Matter***

11. Claim 26 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia L Davis whose telephone number is (571) 272-3117. The examiner can normally be reached on 8:30 to 6, Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (703) 272-3155. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CLD
9/13/2004

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